



The cards and labels below show what happens when you use a force meter to weigh an object, and when someone does a bungee jump. A bungee jumper bounces up and down a few times before they stop moving – these cards only show what happens as far as the bottom of the first fall.

1 Cut out the cards and arrange them to explain how the forces affect:



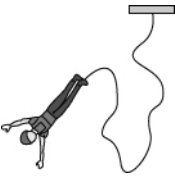











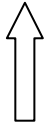
- a the force meter
- b a bungee jumper.

Check your arrangement with your teacher before sticking them into your book.

I can...

- compare the size of different forces
- explain the effects of balanced and unbalanced forces.

A	B	C	↓	↓	↑
D	E	F	↓	↑	↑
<p>As the spring stretches, it produces a bigger force.</p>	<p>When the spring has stretched far enough, the force from the spring is equal to the weight of the object.</p>	<p>The object has just been put on the force meter. The spring has just started to stretch.</p>			
G	H	I			
<p>The downwards force is bigger than the upwards force, so the spring gets longer.</p>	<p>The forces are balanced so the spring does not stretch any further. The force meter is showing the weight of the object.</p>	<p>The downwards force is still bigger than the upwards force, so the spring carries on stretching.</p>			

<p>a</p> 	<p>b</p> 	<p>c</p> 	<p>d</p> 	<p>e</p> 
				
<p>f</p> 	<p>g</p> 	<p>h</p> 	<p>i</p> 	<p>j</p> 
<p>k</p> <p>The person is falling faster so the air resistance is greater. They haven't fallen far enough yet to stretch the bungee.</p>	<p>l</p> <p>The downwards force is much bigger than the upwards force, so they fall faster and faster.</p>	<p>m</p> <p>The forces on the person are balanced. Because they are already moving, they continue to move at the same speed.</p>	<p>n</p> <p>The downwards force is still bigger than the upwards force, so they are still gaining speed downwards, but not as much as before.</p>	<p>o</p> <p>The upwards force will make the person slow down and stop, and will then make them start to move upwards again.</p>
<p>p</p> <p>The bungee has stretched even more, so the total upwards force is bigger than the downwards force.</p>	<p>q</p> <p>The person has just jumped. Their weight is pulling them downwards. They are not moving fast, so there is a very small force from air resistance.</p>	<p>r</p> <p>The bungee has just begun to stretch. It starts to exert an upwards force on the jumper. There is also a force from air resistance.</p>	<p>s</p> <p>The combined upwards forces are not quite as big as the weight. The person is still gaining speed downwards, but not very much.</p>	<p>t</p> <p>The bungee has stretched enough so that the force from the bungee and the air resistance combined are the same size as the weight.</p>